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البريد

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حاضرة 15

* POP →
① Authorization
② Transaction
③ Update

* IMAP → to solve some POP issues

* HTTP → not a substitute for SMTP; just to simplify the access via web browsers

POP

- ① username and password by client (Authorization)
- ② list, retrieve, delete, quit (transaction)
- ③ Update starts after quit (it check the operations and start processing after quit)

disadvantages

- ① stateless protocol
- ② Client oriented; modifications are local to each client

IMAP

- ① state protocol (يخزن حالة ال User الى ديفياد Protocol)
- ② Organize your mail box by allowing users to create folders; because it stores user's state

HTTP

- ① State (storage by cookies)
- ② organize (just like IMAP)
- ③ better user interface

⇒ DNS

* DNS

- Instead of remembering IDs, it's easier to associate names to IDs and remembering names. we can even change IDs for name.
- Each host name have corresponding name understood by the router "IP Address"
- The router understands the user address using the IP add.
- * DNS is responsible to translate Domain Names to IP addresses. Since each Domain has a corresponding IP
- * DNS is an application layer protocol, Hence, it does not work on routers.
- Host aliasing; many servers can ~~have~~ share the same alias; eg. we can log to amazon using the same URL, but each user will get different ~~IP~~ IP which prevent congestions on the servers.
- * mail servers can hold the same host name through aliasing

Centralized DNS issues

- ① Single Point of Failure
- ② Traffic volume (Congestion)
- ③ Centralized database
- ④ Hard ~~maintain~~ maintenance

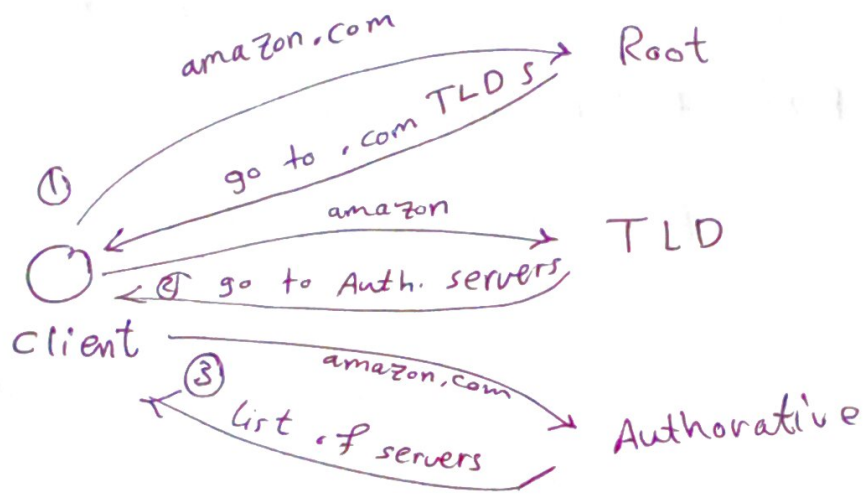
→ So, DNS is distributed in hierarchical structure divided to 3 Levels

- ① Root servers
- ② TLD (Top-Level domain) servers
- ③ Authoritative servers

- Root Servers (suffixes such as .com; .net; .org; --- etc.)
- TLD communicate with authoritative servers of websites.

amazon.com

- ↳ ① Root server redirect to .com TLD servers
- ② TLD servers redirect to amazon servers.
- ③ amazon servers then send list of servers



* Local DNS Server TLD Category

not a part of DNS hierarchy.

located at ISP

- this acts as ~~web~~ cache (proxy server) for Domain Names

check 2.67 to understand the issue with DNS (8 steps)

- Since local DNS stores Domains; no recursive query (8 steps) and delay, processing and load on Root servers are greatly reduced

This introduces the issue of possible outdated domain-IP pair

- one solution is to update Local DNS when there is an issue, but this may not always be good

- TTL: Time to live Record مدة حياة ال Record

DNS stores Resource Records with TTL

when TTL ~~exp~~ expires, ^{check 2.70} Local DNS updates the record.

TTL for big servers like amazon and google may differ from TTL of smaller companies

- Root Stores Suffix and corresponding TLD server

→ 2.70 Record يختلف مع Type نوع ال Record, ارجع

type A → ~~at~~ authoritative DNS

type NS → at Root and TLD database

C Name → (canonical name) host have more than one name

طريقه ال TLD ~~Root~~ وكنوعه ال Root

Mx → at TLD (Not sure)

DNS messages → 2.71

query / reply messages with the same ~~form~~ format

نفسه في ال messages

Local DNS ← identification ~~identification~~ ①

query ← flags ② بميز طابقات معينه, بميزه فيها Bit بميزه في ال query
reply

check 2.72

آخر ~~ال~~ fields سألتهم عن ال reply

~~addition~~ additional info usually hold other server IPs

- DNS Uses UDP; messages are small and I care for
SPEEEEEEEED :D

P2P Applications :-

- * معنى P2P فيه اثنين end systems يعني كل واحد عنده نموذج
مقدم للخدمة (client) و خادم (server) ؛ دور السيرفر هو تنظيم العملية
- * أشهر مثال هو Bit-torrent (file-sharing) .
- و VoIP زي (skype) .
- و streaming زي (kankan) .